

ELECTROSTATIC SPRAY COATING APPARATUS AND METHOD

Abstract

A liquid coating is formed on a substrate by electrostatically spraying drops of the liquid onto a liquid-wetted conductive transfer surface and transferring a portion of the thus-applied liquid from the transfer surface to the substrate. Optionally, one or more nip rolls force the substrate against the transfer surface, thereby decreasing the time required for the drops to spread and coalesce into the coating. Preferably, the coating is passed through an improvement station comprising two or more pick-and-place devices that improve the uniformity of the coating. The coating can be transferred from the conductive transfer surface to a second transfer surface and thence to the substrate. Insulative substrates such as plastic films can be coated without requiring substrate pre-charging or post-coating neutralization. Porous substrates such as woven and nonwoven webs can be coated without substantial penetration of the coating into or through the substrate pores.